

## TECHNICAL FIELD

## BACKGROUND OF THE INVENTION

Therefore, a sliding visor is sought, which can be rotated from a stored position to a use position, and which can be moved longitudinally along the rod. It is desired that the visor be aesthetically pleasing, and have a relatively simple design.

The track extends longitudinally on one surface of the visor body. The track forms a substantially enclosed longitudinally extending passage adjacent the surface of the visor body. The passage is shaped to receive a portion of the guide in a sliding engagement. Upon moving the visor longitudinally along the rod, the track slides relative to the guide, which allows the visor to be used in an extended or retracted position.

The metal insert 36 may be formed from a low carbon 65 steel, and can be extruded and bent. The flats and lobes (not shown) on the metal insert are formed using a coining process. The number of flats and lobes formed depends on

the torque control used. The plastic cover 38 is formed from nylon or glass-filled nylon and is injection molded with the metal insert therein.

Referring to FIG. 2, the torque control 32 allows the visor body 26 to be moved between and held at various rotational positions with respect to the rod. The torque control 32 is a piece of metal bent from a substantially U-shaped blank. The torque control 32 is pivotally attached to the metal insert portion of the rod by means of the lobes and flats and the geometry of the torque control. In this embodiment, the torque control 32 is formed from spring steel.

Referring to FIG. 4, torque control 32 includes a flange 44 and two legs 46. The flange 44 is longitudinally extending and has two spaced holes 48. A plane of the torque control is designated by the flange. The two legs 46 are spaced apart from one another and extend from the edge of the flange 44 at opposite ends thereof.

Referring to FIG. 5, each of the legs 46 has a substantially elliptical cross-sectional shape. The cross-sectional shape includes a first sidewall 52, a second sidewall 54, an upper concave portion 56, a lower concave portion 58, an angled portion 60, and end portion 62. The first and second sidewalls 52 and 54 are substantially parallel to the flange 44 and spaced from one another. The upper portion 56 is curved and connects the first and second sidewalls. The lower portion 58 is curved toward the first sidewall 52.

The angled portion 60 extends outwardly at an angle from the flange 44 to the first sidewall 52. The end portion 62 extends from the free end of the lower curved portion 58. The end portion 62 is substantially parallel to the flange 44. The free end of the end portion 62 is spaced from the angled portion 60 leaving a gap represented by the arrow g.

In other embodiments, the angled portion 60 and the end portion may be eliminated and the design of the control modified in order to be used with different visor body geometries.

A channel 64 is formed through each elliptical leg, between the first and second sidewalls. The distance between these sidewalls is represented by the arrow d. The torque control should be formed to operate as a functional hinge, so that the rotational axis of the rod cannot move during use.

Referring to FIG. 4, the second sidewall 54 of each leg 46 includes an extension 66 longitudinally extending from the inner edges of each second sidewall 54. The extensions 66 extend between the legs 46. Each second sidewall 54 also includes a cutout 68 extending inwardly from the outer edges of each second sidewall 54.

The torque control 42 is cut from a sheet of SAE 1070 or 1095 spring steel with a thickness of from 0.9 to 1.1 mm, and bent to the desired shape. The material is heat treated to a Rockwell hardness of from 47 to 49. The dimensions of the features are experimentally determined and depend on the predetermined visor system thickness, the rod's dimensions, the material used, and the force requirements. A conventional lubricant should be used. The lubricant should work at high and low temperatures.

Referring to FIGS. 2 and 3, the guide 34 has a substantially H-shaped cross section. The H-shaped guide 34 includes a first leg 70 joined to a second leg 72 by a cross bar 74. The guide in another embodiment can be a T-shaped extension. The first and second legs are spaced and parallel to one another. The free end of the second leg 72 is attached to the base 44 of the torque control 32 using conventional fasteners (not shown), such as rivets. The fasteners extend through the holes 48 in the torque control. The guide 34 is formed by injection molding from nylon or other suitable plastics.

Referring to FIG. 2, the visor body 26 includes a channel 76, a bore 78, a cutout 80, a pin 82, a slide track 84, and a projection 86. The visor body 26 is substantially rectangular with the channel 76 longitudinally extending along a portion of the top edge of the visor body. When cloth or the like (not shown) is wrapped around the visor body the channel 76 is enclosed.

The bore 78 extends longitudinally through the upper portion of the visor body between the channel 76 and the front edge 88. In this embodiment, the bore 78 is formed by a conventional arrangement of a plurality of curved arms 90. The arms 90 alternately form lower and upper curved surfaces of the bore. During movement of the visor body between the stored and lowered positions the arms 90 act as a hinge. The bore 78 is dimensioned such that the visor body 26 slides smoothly over the rod 30 during lateral movement of the visor body.

The cutout 80 is U-shaped and formed within the top edge of the visor body 26 between the channel 76 and the rear edge 92. The pin 82 extends longitudinally across the cutout 80. Referring to FIG. 1, the vehicle 10 includes a bracket (not shown). This bracket is located adjacent the windshield 12 and spaced from the elbow bracket 28. When the pin 82 is secured within the bracket (not shown) the visor 26 is retained along the windshield 12 either in the stored position or the lowered position.

Referring to FIGS. 2 and 3, the slide track 84 is integrally formed on the upper surface 94 of the visor body. The slide track 84 includes a first vertical wall 96, a second vertical wall 98 spaced from the first vertical wall 96, a horizontal wall 100, and an opening 102.

The first and second vertical walls 96 and 98 extend from the upper surface 94 of the visor body. The horizontal wall 100 joins the first and second vertical walls 96 and 98. A ridge 104 extends from the first vertical wall 96. The horizontal wall 100 is substantially parallel to and spaced from the surface 94 of the visor body, so that substantially enclosed passage 106 is formed therebetween. The surface 94 of the visor body may be the back of a mirror frame assembly in some applications. The passage 106 extends longitudinally along a portion of the visor body adjacent the surface 94. The passage is shaped to receive a portion of the guide 34 in a sliding engagement. The horizontal wall 100 includes a partially longitudinally extending slot 108.

The opening 102 is formed at the free end of each of the walls. The walls are shaped so that they are angled at the opening 102 thus forming lateral and vertical lead-ins into the passage.

The projection 86 extends from the upper surface 94 of the visor body. The projection is wedge shaped angled upwardly from the rear edge 88 toward the forward edge 92. Thus the projection 86 includes a vertical surface 110, which is aligned with the opening 102 of the track 84.

The visor body and all of its components may be integrally injection molded from ABS plastic or other suitable plastics that have the appropriate properties for an automotive environment.

Assembly will now be discussed with reference to FIGS. 2 and 3. The guide 34 is inserted into the track 84, so that the first leg 70 is within the passage 106. The angled free ends of the track walls guide the guide 34 into the passage 106 vertically and laterally. The rod 30 is then inserted through the visor body bore 78. Thus, the rod 30 extends into the channel 76. The metal insert 36 is passed through the channels 64 of the torque control 42 (as shown in FIGS. 4 and 5) until the lobe (not shown) is between the legs 46 in